Inter-operability between RCE collaboration portal and BRCs

Stephan Bour

National Institute of Allergy and Infectious diseases

Office of Technology and Information systems

Purpose of the communication portal

- Effectively exchange data and information to enhance the productivity of the scientists and administrators working in the RCEs

- Make synchronous and asynchronous collaboration easy and routine

- Integrate disparate software applications within a common user environment

- Understand and disseminate "best practices" for the use of collaboration technology in distributed biomedical research

Agenda

1. Basic features of the RCE collaboration portal
2. Implementation model and challenges
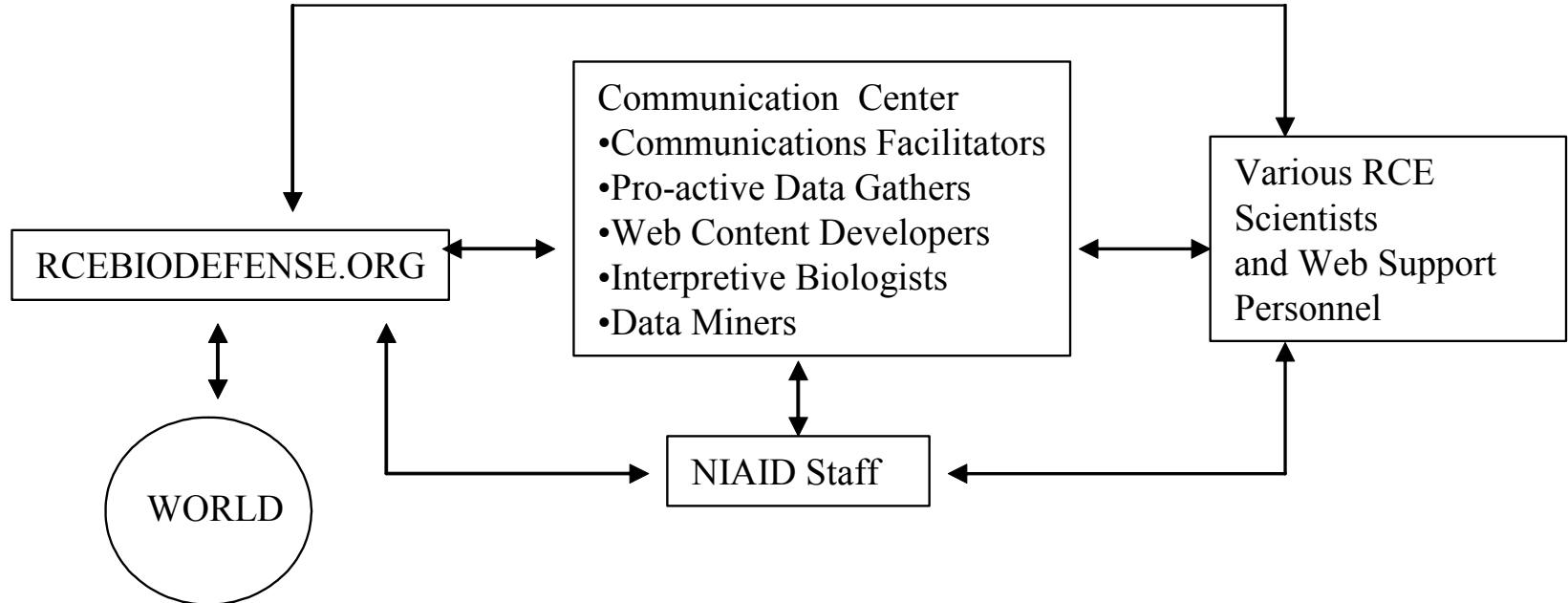3. Technology platforms
4. Interactions with the BRCs

Basic features

- Public face of the RCE effort through a standard web site

- Private collaboration portal for document exchange, data uploading, bioinformatics tools, scheduling, contacts and administration

- Standard video conferencing system with presentation and document exchange capabilities

Basic structure

RCEBIODEFENSE.ORG

WORLD

Communication Center
• Communications Facilitators
• Pro-active Data Gathers
• Web Content Developers
• Interpretive Biologists
• Data Miners

Various RCE Scientists and Web Support Personnel

NIAID Staff

Conception and implementation model

- Consensus-building centralized effort
- Managed and partially funded by the NIAID OTIS
- Clean slate: freedom to implement best systems without the need to deal with legacy systems

Challenges

- Over 100 institutions grouped in 8 regional Centers:
  - Different needs
  - Different levels of involvement in the project
  - Difficulty in bringing everyone to the table

- Competing technologies and vendors to choose from

Challenges

- If you build it, they may not come: how to provide compelling reasons for scientists to contribute data and use the services (incentives, value-added)

- Provide an infrastructure for sustained pro-active approach to data gathering by domain experts (computational biologists with inter-disciplinary skills)

- Deal with integrating incompatible data types to minimize the pain of the data contributor

- Keep the end user in mind: provide training and unified interfaces. Encourage object-oriented strategies that allow refinements of core tools rather than stove pipe proliferation

Video conference leading candidate: Insors grid

- Voice, video and data combined under a single easy to use IP platform.
- Key Attributes:
  - Client/Server Architecture.
    - No special hardware—commodity PCs and servers.
    - Clients—PC endpoints running Windows 2000 or XP.
    - Server—Unified Conferencing Server (UCS): a centrally located server running Red Hat's Enterprise Linux.
    - Highly scalable

Insors technical specs

RTSP – Real Time Streaming Protocol RTSP (RFC 2326)

Client always initiates meeting (less firewall issues)

Uses UDP/RTP ports in the 10000 to 20000 range

Commonly inspected by firewalls to allow streaming media requests

Works with NAT/PAT

Allows H.323 (Polycom) call-in

Insors modules

In addition to audio and video, the inSORS Grid includes:

- IGChat – Used as a backchannel to communicate without disrupting the audio presentation.
- IGCam – Controls local and remote Pan Tilt Zoom (PTZ) cameras through Visca control.
- IGPIX – Web conferencing application.
- IGFile – Transfer files from client to server for download by other meeting participants
- IGWhiteboard – Integrated, shared whiteboard application.

Video conferencing effort status

- Concluded 5-client alpha testing
- Contracted for initial beta deployment of 15 clients
- Beta phase to last until the end of the year

Portal leading candidates

Microsoft SharePoint:

1. Plusses:
   - Based on widely deployed .Net framework
   - Integration with MS Office
   - Indexing, searching and survey modules out of the box
   - Support for document check-in/check-out, versioning and metadata
   - Support for CMS

2. Minusses:
   - It's a Microsoft product ;-)
   - Requires MS Windows Server and SQL Server
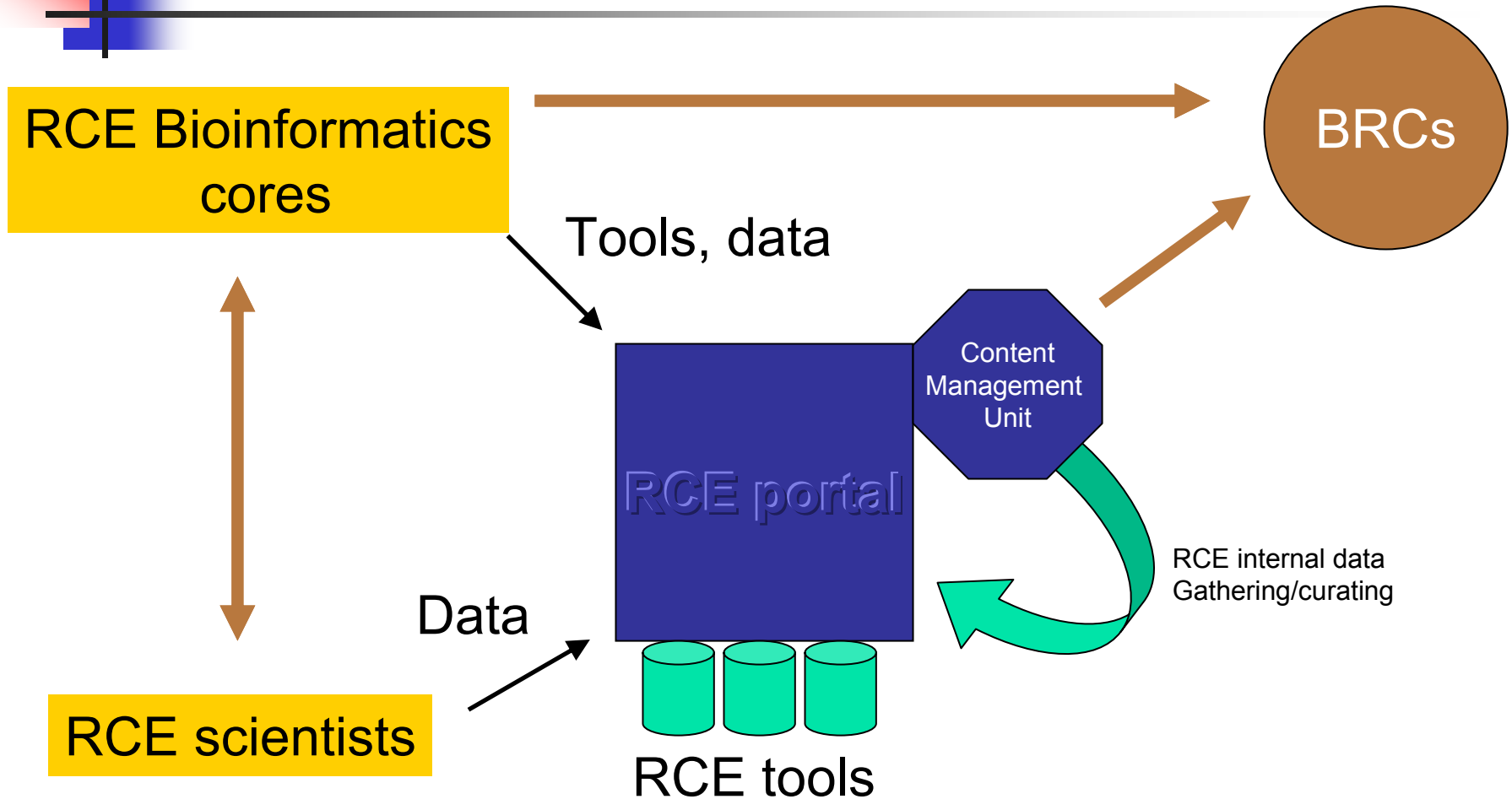   - Costly

Portal leading candidates

Sakai/CTools:

1. Plusses:
   - Community source (influence on future development)
   - Well-supported development effort
   - Course and training management tools included
   - Access to community-developed modules
   - Less costly

2. Minusses:
   - No search engine, indexing and metadata (yet)
   - Limited commercial developer community (4 partners)

Tools and content model

RCE Bioinformatics cores

BRCs

Tools, data

Content Management Unit

RCE portal

RCE internal data Gathering/curating

Data

RCE scientists

RCE tools

Inter-operability strategies

- 2 parallel strategies:
  - Preserve legacy systems and build translators
  - Agree on standards before building

Main advantage of the RCE collaboration portal: nothing is built yet.

• Little resources to build tools at the RCEs

• We are ready to consider the needs of the BRCs in our technological choices

• We have the ability to build from the ground up around agreed-upon standards

• This common effort could give rise to published procedures and APIs for building integrated biological data warehouses and mining tools

RCE-BRC action items

- Address data exchange and ownership issues
- Work together toward common standards, ontologies, syntax, compatible technologies, published APIs
- Work with outside standard-setting organizations to contribute bioinformatics-specific terms and protocols that could be applied across RCEs and BRCs (HL7, SNOMED)
- Expand the existing RCE-BRC collaborative effort
- Include achievements in collaborative effort in grant/contract performance metrics
- Make the RCE portal available to BRC for central access to repositories and tools